IN THE CLAIMS

Please cancel claims 2, 3, 7, 20, and 22, amend claims 1, 4-6, 8, 11, 16, 19, 21, and 23, and add new claims 27-31 as follows:

1. (CURRENTLY AMENDED) A process for encoding data, comprising:

estimating forms of a plurality of functions, each function relating encoding size to encoded quality for ~~an associated~~ each frame ~~belonging to~~ in a sequence of frames, each frame having data for an image; ~~and~~

prior to encoding any of the frames, performing a search of all frames in the sequence of frames for ~~estimating~~ a best quality value for ~~producing encoded~~ encoding the sequence of frames, whose encoded sizes satisfy one or more constraints, the constraints being associated with one of a transmission line bandwidth, a receiver buffer size and total compressed size, the estimating a best quality value being based in part on the functions;

encoding each frame of the entire sequence of frames with the best quality value;

determining whether each encoded frame satisfies the constraints; and

if the encoded frames satisfy the constraints, transmitting the sequence of encoded frames.

2. (CANCELLED)

3. (CANCELLED)

4. (CURRENTLY AMENDED) The process of claim 1, wherein the ~~estimating a best quality value includes executing a~~ search ~~that~~ reduces the search range for said best quality value by subdivision.

5. (CURRENTLY AMENDED) The process of claim [[4]]1 wherein said search is a subdivision search algorithm.

6. (CURRENTLY AMENDED) The process of claim [[4]]1 wherein said search is a binary search algorithm.

7. (CANCELLED)

8. (CURRENTLY AMENDED) The process of claim [[7]]1, wherein each encoded frame produces a group of temporally encoded pictures.

9. (ORIGINAL) The process of claim 1, wherein each act of estimating one of the forms, further comprises:

computing a plurality of pairs of encoded quality and encoded size values for each frame of the sequence from encoded frame data; and

determining a functional relationship between values of the encoded quality and the encoded size for the quality of frames from the pairs of values.

10. (ORIGINAL) The process of claim 9, wherein the computing further comprises:

encoding each frame of the sequence with a plurality of qualities to compute encoded data sizes associated with each of the plurality of qualities.

11. (CURRENTLY AMENDED) The process of claim [[10]]1, wherein the estimating is performed across the sequence of frames on multiple processors in parallel~~acts of encoding of a frame with the plurality of qualities are performed in parallel~~.

12. (ORIGINAL) The process of claim 1, wherein the estimating a best quality value, further comprises:

selecting an encoded image quality of one of the plurality of frames; and

deciding whether the encoded size associated with the encoded image quality satisfies a constraint based on one of transmission bandwidth, receiver buffering, total compressed size, and receiver prebuffering.

13. (ORIGINAL) The process of claim 12, wherein the deciding is based on two of the transmission bandwidth, receiver buffering, and receiver prebuffering.

14. (ORIGINAL) The process of claim 12, further comprising:

determining the encoded size associated with each encoded image quality from the form of the functional relation between the encoded quality and the encoded size for the associated frame.

15. (ORIGINAL) The process of claim 10, wherein the transmitting comprises:

selecting the one of the plurality of qualities having a closest value to the best quality value; and

wherein the transmitting sends frames encoded with the selected quality.

16. (CURRENTLY AMENDED) A system for encoding image frames, the system comprising:

~~a variable bit rate encoder; and~~

(a) a controller connected to receive data on sizes of[[n]] image frames that are part of a sequence of image frames, to be encoded by the encoder and to control quality of the encoded frames produced by the encoder based on:

(i) an estimation of forms of a plurality of functions, each function relating encoding size to encoded quality for each frame in the sequence of frames;

(ii) a search of all frames in the sequence of frames for a best quality value for encoding the sequence of frames whose encoded sizes satisfy one or more constraints, the constraints being associated with one of a ~~; the controller capable of causing the encoder to generate encoded data at a rate responsive to one or more of a~~ bandwidth of a transmission line, space in a receiver buffer and a total compressed size ~~constraint~~; and

(b) a variable bit rate encoder controlled by the controller configured to encode each frame of the entire sequence of frames with the best quality value, wherein the controller is further configured to determine whether each encoded frame satisfies the constraints, and if the encoded frames satisfy the constraints, transmitting the sequence of encoded frames.

17. (ORIGINAL) The system of claim 16, wherein the controller is configured to determine a relation between quality of an encoded image frame and amount of encoded data from the received size data.

18. (ORIGINAL) The system of claim 16, wherein the controller is configured to determine a best quality value for encoding an image frame from size data on data frames encoded with different qualities.

19. (CURRENTLY AMENDED) A program storage media storing computer executable instructions, the instructions to cause a computer to:

estimate forms of a plurality of functions, each function relating encoded size to encoded quality for ~~an associated~~ each frame ~~belonging to~~ in a sequence of frames, each frame having data for an image;

prior to encoding any of the frames, ~~estimate~~ perform a search of all frames in the sequence of frames for a best quality value for ~~producing encoded~~ encoding the sequence of frames whose encoded sizes satisfy one or more constraints, the constraints being associated with one or more of a transmission line bandwidth, a receiver buffer size and a total size constraint, the estimating a best quality value being based in part on the functions; ~~and~~

encode each frame of the entire sequence of frames with the best quality value;

determine whether each encoded frame satisfies the constraints; and

if the encoded frames satisfy the constraints, order transmission of frames of the sequence, ~~at least some of the frames being encoded with a quality based on the best quality value~~.

20. (CANCELLED)

21. (CURRENTLY AMENDED) The media of claim [[20]]19 wherein said search is a binary search algorithm.

22. (CANCELLED)

23. (CURRENTLY AMENDED) The media of claim [[22]]19, wherein each encoded frame produces a group of temporally encoded pictures.

24. (ORIGINAL) The media of claim 19, wherein each instruction to estimate one of the forms, further causes the computer to:

compute a plurality of pairs of encoded quality and encoded size values for each frame of the sequence from encoded frame data; and

determine a functional relationship between values of the encoded quality and the encoded size for the plurality of frames from the pairs of values.

25. (ORIGINAL) The media of claim 24, wherein the instruction to compute further causes the computer to:

encode each frame of the sequence with a plurality of qualities to computer encoded data sizes associated with each of the plurality of qualities.

26. (ORIGINAL) The media of claim 19, wherein the instruction to estimate a best quality value, further causes the computer to:

select an encoded image quality of one of the plurality of frames; and

decide whether the encoded size associated with the encoded image quality satisfies a constraint based on one of transmission bandwidth, receiver buffering, and receiver prebuffering.

27. (NEW) The process of claim 1 wherein if one of more of the encoded frames do not satisfy the constraints:

estimating a new form of the plurality of functions based on the prior estimating and search; and

repeating the performing a search, encoding, and determining steps based on the new form.

28. (NEW) The system of claim 16 wherein if one of more of the encoded frames do not satisfy the constraints, the controller:

estimates a new form of the plurality of functions based on the prior estimating and search;

repeats the search of all of the frames;

causes the encoder to encode each frame of the entire sequence based on the new form; and

repeats the determining.

29. (NEW) The system of claim 16, wherein the controller is configured to estimate the forms across the sequence of frames on multiple processors in parallel.

30. (NEW) The media of claim 19 wherein if one of more of the encoded frames do not satisfy the constraints, the instructions cause the computer to:

estimate a new form of the plurality of functions based on the prior estimating and search; and

repeat the performing a search, encoding, and determining steps based on the new form.

31. (NEW) The media of claim 19, wherein the instructions cause the computer to estimate the forms across the sequence of frames on multiple processors in parallel.